



UNITED STATES PATENT AND TRADEMARK OFFICE

[Signature]
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,606	12/15/2005	Pierre Cosson	25421-502 NATL	9304
25871	7590	11/16/2007		
SWANSON & BRATSCHUN, L.L.C. 8210 SOUTHPARK TERRACE LITTLETON, CO 80120			EXAMINER GRASER, JENNIFER E	
			ART UNIT	PAPER NUMBER
			1645	
			MAIL DATE	DELIVERY MODE
			11/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/536,606

Applicant(s)

COSSON ET AL.

Examiner

Jennifer E. Graser

Art Unit

1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 1-22 and 29-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group V, claims 23-28 (gene VIR5), in the reply filed on 10/22/07 is acknowledged. Claims 1-22 and 29-34 are hereby withdrawn as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112-2nd paragraph

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 is vague and indefinite because it recites a method of 'determining the degree of virulence of a pathogen in a subject 'which measures the level of expression of at least one polypeptide encoded by gene VIR5 and compares this amount to the amount of said polypeptide present in a control sample from a second subject known not to have the presence of said pathogen and recites that an alteration of the expression in the first subject as compared to the control which does not express the polypeptide indicates the degree of virulence of said pathogen. This is extremely vague and confusing because it is unclear how one can determine an alteration in expression compared to a control sample from a subject which does not have the pathogen, e.g, which does *not* express the polypeptide. How can one determine a change relative to a control which does not express the gene? Additionally, what type

Art Unit: 1645

of "alteration" is being measured, e.g., is more of the gene expressed, less of the gene being expressed, none of the gene being expressed, etc.? Clarification and correction is requested.

Claims 23 and 26 are vague and indefinite because the specification teaches that the VIR5 (SEQ ID NO: 9) is a gene expressed by *P.aeruginosa* and encodes imidazoleglycerol-phosphate synthase, cyclase subunit (hisF ; PA5140), e.g., taught as SEQ ID NO:10. See page 14, lines 10-15, and page 15, lines 1-5, of the specification. Accordingly, it is unclear how measuring the level of this *P.aeruginosa* gene could determine the degree of virulence of **any** pathogen in a subject as encompassed by the instant claims.

Claim 26 is vague and indefinite because it recites a method of 'determining the degree of virulence of a pathogen in a subject 'which measures the level of expression of at least one **polynucleotide** encoded by gene VIR5 and compares this amount to the amount of said polynucleotide present in a control sample from a second subject known not to have the presence of said pathogen and recites that an alteration of the expression in the first subject as compared to the control which does not express the polypeptide indicates the degree of virulence of said pathogen. This is extremely vague and confusing because first a gene does not encode a polynucleotide, it encodes a polypeptide so lines 1-2 of part (a) are vague and confusing. Additionally, it is unclear how one can determine an alteration in expression compared to a control sample from a subject which does not have the pathogen, e.g, which does *not* express the polynucleotide. How can one determine a change relative to a control which does not

Art Unit: 1645

express the gene? Additionally, what type of "alteration" is being measured, e.g., is more of the gene expressed, less of the gene being expressed, none of the gene being expressed, etc.? Additionally, the claim recites comparing the amount of said polynucleotide present in the control sample, yet the mere presence of the polynucleotide does not directly correlate to the level of expression, e.g., measuring the level of polynucleotide would not indicate how much of this polynucleotide was actually expressed as a protein. Clarification and correction is requested.

Claims 23 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the claims fail to provide complete steps for a functional method. There is no description of how the expression of the polynucleotide is measure. There is no description of what type of alteration is being detected and how the alteration relates to the degree of virulence, e.g., is more of the gene expressed, less of the gene being expressed, none of the gene being expressed, etc.? Clarification and correction is requested.

Claims 23-28 are also vague and indefinite because the mere recitation of a name, i.e., VIR5, to describe the gene/polypeptide is not sufficient to satisfy the Statute's requirement of adequately describing and setting forth the inventive concept. Further, the name "VIR5" is used for many other proteins/protein fragments in the art which are not a gene expressed by *P.aeruginosa* and encodes imidazoleglycerol-phosphate synthase, cyclase subunit. The claim should provide any structural properties, such as the amino acid sequence of the protein or the nucleic acid of the

Art Unit: 1645

polynucleotide, which would allow for one to identify the polynucleotide being used in the method without ambiguity. The mere recitation of a name does not adequately define the claimed compound. While the specification can be used to provide definitive support, the claims are not read in a vacuum. Rather, the claim must be definite and complete in and of itself. Limitations from the specification will not be read into the claims. The claims as they stand are incomplete and fail to provide adequate structural properties to allow for one to identify what is being claimed.

Claim Rejections - 35 USC § 112-Enablement

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 23-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The instant claims are drawn to a method for determining the degree of virulence of *any* pathogen in a subject by measuring the level of expression of the VIR5 gene from a first subject and comparing it to the level of expression of the VIR5 gene in a control sample that does *not* contain the pathogen which expresses the VIR5 gene. The specification is not enabled for this method. The instant specification, regarding VIR5, teaches at page 14, lines 10-15, the following:

Art Unit: 1645

“A *Pseudomonas* bacterial mutant (MUT5) was made by transposon insertion in a *P.aeruginosa* wild-type strain PT894. In the Dictyostelium growth assay, the mutated microorganism was less virulent compared to an isogenic bacterial strain. The nucleotide sequence immediately following the transposon insertion was cloned and identified as the gene encoding imidazoleglycerol-phosphate synthase, cyclase subunit (hisF ; PA5140). This gene encodes the VIR5 nucleic acid (SEQ ID NO:9) shown in Table 7A.”

The specification fails to teach that the VIR5 gene is expressed by any pathogen other than *P.aeruginosa*. Accordingly, it would take undue experimentation for one skilled in the art to use the VIR5 gene to determine the degree of virulence of *any* pathogen, which includes any parasite, any Genus/species of bacterium, virus, etc. Additionally, the specification fails to teach how one of skill in the art could determine the ‘degree of virulence’. The results in the instant specification do not teach a ‘degree of virulence’ could be determined or any assay for doing such. The specification merely teaches that by mutating the VIR5 gene in a wild type *P.aeruginosa* strain, one could obtain a mutant which was less virulent compared to the wild-type strain. It is not taught to what degree the virulence was reduced. Accordingly, a degree of virulence could not be determined by just measuring the level of expression of this polynucleotide in a sample and it definitely could not be used to determine the degree of virulence of *any* pathogen. Additionally, claims 26-28 recite measuring the level the level of expression of at least one **polynucleotide** encoded by gene VIR5 and compares this amount to the amount of said polynucleotide present in a control sample from a second subject known not to have the presence of said pathogen. It is not clear how this method works as a

Art Unit: 1645

polynucleotide encodes a polypeptide, a gene does not encode a polynucleotide.

Additionally, as stated in the 112, 2nd paragraph rejections above, the instant claims do not recite functional methods with complete method steps. There is no description of how the expression of the polynucleotide is measure. There is no description of what type of alteration is being detected and how the alteration relates to the degree of virulence, e.g., is more of the gene expressed, less of the gene being expressed, none of the gene being expressed, etc.? It would take undue experimentation for one of skill in the art to practice the claimed methods for determining the degree of virulence of a pathogen in a subject given the lack of direction and guidance provided by the instant specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 23-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Rubenfield et al (US 6,551,795 B1).

Rubenfield et al disclose an amino acid sequence from *P.aeruginosa* which is 100% identical to Applicants' SEQ ID NO: 10 and is referred to in the instant

Art Unit: 1645

specification as 'VIR5' and the nucleic acid encoding said gene. See sequence alignment in Public PAIR under supplemental content tab, Issued_Patents_AA, Result # 2 for the amino acid sequence and N_Geneseq, Result #3 for the nucleic acid sequence. Rubenfield et al teach that the polypeptides and nucleic acids of their patent may be used in diagnosis and therapy. Methods for the detection, prevention and treatment of pathological conditions resulting from bacterial infection are also taught. See abstract. Columns 7-8 teach expressing the DNA in a recombinant host cell and use of these expression systems or vectors for detecting bacterial infection, e.g., virulence. Column 10 describes assays for screening test compounds for anti-bacterial activity which use said nucleic acid sequence and looking for its expression. Columns 25-26 teach use of the nucleic acid sequences in diagnostic applications. Knock-out gene (alteration) experiments are taught at the bottom of column 26. Although Rubenfeld does not specifically refer to the protein or nucleic acid as VIR5 it is inherently the same as the VIR5 of the instant invention given the identity of the structure. The method steps set forth in instant claims 23-28 merely describe the gene expression and knock-out gene expression methods taught by Rubenfield et al and are anticipated by the instant claims.

8. Claims 23-28 are rejected under 35 U.S.C. 102(a) as being anticipated by Cosson et al (WO 02/101081). The reference has a different inventive entity and was published prior to the effective priority date of 12/20/02.

Cosson et al teach a method for determining the virulence of a pathogen in a subject which is identical to what is taught in instant claims 23-28. The reference

Art Unit: 1645

teaches the use of the gene, VIR5. See pages 2-4, 11 and claims. See sequence alignment in Public PAIR under supplemental content tab, Issued_Patents_AA, Result # 2 for the amino acid sequence and N_Geneseq, Result #3 for the nucleic acid sequence.

Prior art made of record, not relied on.

Stover et al. Nature 406:959-964(2000). The reference teaches the amino acid sequence and the nucleic acid sequence encoding it which is identified as 'Imidazole glycerol phosphate synthase subunit hisF1 (EC 4.1.3.-) (IGP synthase cyclase subunit) (IGP synthase subunit hisF1) (ImGP synthase subunit hisF1) (IGPS subunit hisF1)' and the sequences are 100% identical to that which the specification refers to as VIR5 (SEQ ID Nos: 9 and 10). However, the reference does not teach or suggest their use in the claimed methods.

9. Correspondence regarding this application should be directed to Group Art Unit 1645. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Remsen. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 1645 Fax number is 571-273-8300 which is able to receive transmissions 24 hours/day, 7 days/week.

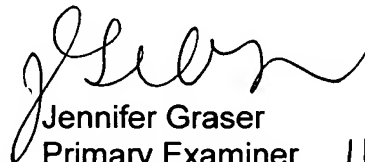
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer E. Graser whose telephone number is (571) 272-0858. The examiner can normally be reached on Monday-Thursday from 7:30 AM-6:00 PM.

Art Unit: 1645

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Bruce Campell, can be reached on (571) 272-0974.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-0500.



Jennifer Graser
Primary Examiner
Art Unit 1645

11/6/07